

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Shale Breaks

Site ID: R069XY048CO

Major Land Resource Area: 69 – Upper Arkansas Valley
Rolling Plains



Physiographic Features

This site occurs on broken lands controlled by shale bedrock. Slopes range from gently rolling to hilly.

Landform: hills, ridges, cuestas, mesas

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	6000
Slope (percent):	6	25
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	medium	very high

Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

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MLRA: 69 – Upper Arkansas Valley Rolling Plains

Shale Breaks
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Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	10	14

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

Climate Stations		Period	
Station ID	Location or Name	From	To
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at <http://www.wrcc.dri.edu/> website.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are typically shallow, well drained, and moderately slow to (more typically) very slowly permeable. These soils occur on ridges and hills. Most soils have weathered shale at depths of 6 to 20 inches. The surface layer is 3 to 8 inches thick and texture ranges from silt loam to clay. The underlying horizons are typically silty clay loam, clay loam, clay or silty clay. Exposed shale bedrock and surface shale fragments are inherent to this site and the surface often has large cracks traversing the surface. The available water capacity is typically very low or low. The soil moisture regime is aridic or ustic-aridic. Steeper slopes typically have flow paths, rills and small gullies. Sub-surface soil layers, where not affected by bedrock, are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Midway, Lismas, Samsil, and Shingle.

Soil series that will be correlated to other MLRA's when outdated soil surveys are updated are: Lismas and Samsil have aridic-ustic moisture regimes.

Other soil series that have been correlated to this site include: none

Parent Material Kind: shale

Parent Material Origin: residuum, slope alluvium

Surface Texture: clay loam, clay, silty clay loam

Surface Texture Modifier: none to channery

Subsurface Texture Group: clay, clay loam, silty clay loam

Surface Fragments $\leq 3''$ (% Cover): 0 to 25 percent

Surface Fragments $> 3''$ (%Cover): 0

Subsurface Fragments $\leq 3''$ (% Volume): 0 to 25 percent

Subsurface Fragments $> 3''$ (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	well
Permeability Class:	moderately slow	very slow
Depth (inches):	6	20
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	25
Soil Reaction (1:1 Water)*:	7.8	9.0
Soil Reaction (0.1M CaCl₂)*:	7.4	9.0
Available Water Capacity (inches)*:	0.8	4.2
Calcium Carbonate Equivalent (percent)*:	0	35

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

Deterioration of this site, due to continuous grazing without adequate recovery periods following each grazing occurrence, will cause blue grama and galleta to increase and if continued long enough, red threeawn, sand dropseed, ring muhly and bare ground will increase. Western wheatgrass, sideoats grama and green needlegrass will decrease in frequency and production as well as key shrubs such as fourwing saltbush and winterfat. American vetch and other highly palatable forbs will decrease also. Exposed areas of shale bedrock and surface fragments are inherent to this site.

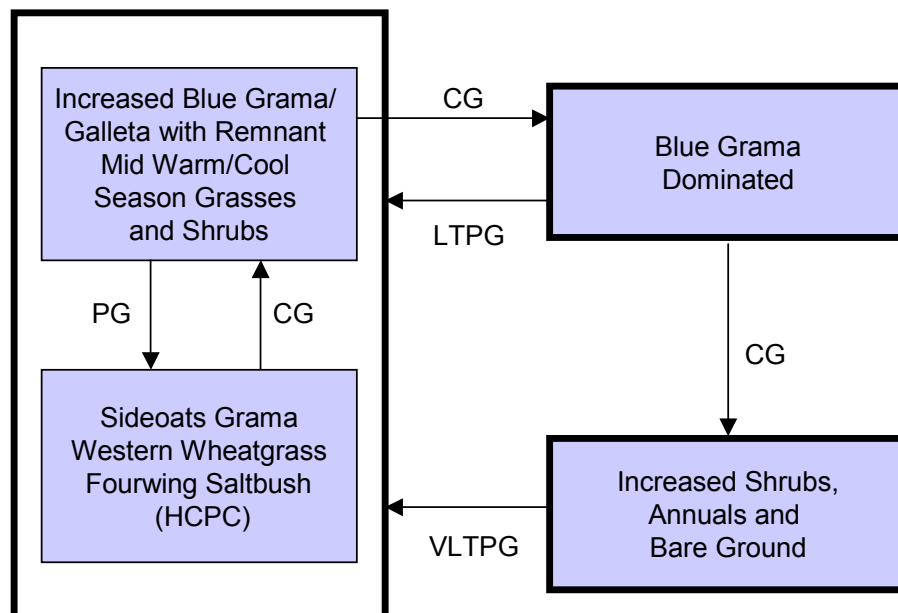
Tillage is not recommended on this site due to steep shallow soils and associated low production potential.

Drier and warmer climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following diagram illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity,
HCPC - Historic Climax Plant Community, **LTPG** - long term prescribed grazing (>40 yrs), **PG** - prescribed grazing with adequate recovery period,
VLTGP - very long term prescribed grazing with adequate recovery periods (>80 yrs)

Plant Community Composition and Group Annual Production

			Sideoats Grama, Western Wheatgrass, Fourwing Saltbush (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	210 - 255	70 - 85
sideoats grama	Bouteloua curtipendula	BOCU	1	60 - 90	20 - 30
western wheatgrass	Pascopyrum smithii	PASM	1	45 - 60	15 - 20
blue grama	Bouteloua gracilis	BOGR2	1	24 - 36	8 - 12
galleta	Pleuraphis jamesii	PLJA	1	15 - 30	5 - 10
alkali sacaton	Sporobolus airoides	SPAI	1	9 - 21	3 - 7
little bluestem	Schizachyrium scoparium	SCSC	1	9 - 21	3 - 7
green needlegrass	Nassella viridula	NAVI4	1	3 - 15	1 - 5
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 6	0 - 2
inland saltgrass	Distichlis spicata	DISP	1	0 - 6	0 - 2
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	0 - 6	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 3	0 - 1
buffalograss	Buchloe dactyloides	BUDA	1	0 - 3	0 - 1
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 3	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 3	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 3	0 - 1
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 3	0 - 1
vine mesquite	Panicum obtusum	PAOB	1	0 - 3	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	3 - 9	1 - 3
threadleaf sedge	Carex filifolia	CAFI	1	0 - 3	0 - 1
other perennial grasses		2GP	1	3 - 9	1 - 3
FORBS			2	15 - 30	5 - 10
American vetch	Vicia americana	VIAM	2	3 - 9	1 - 3
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	3 - 9	1 - 3
Fremont goldenweed	Oonopsis foliosa var. foliosa	OOFOF	2	3 - 6	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	3 - 6	1 - 2
desert princesplume	Stanleya pinnata var. pinnata	STPIP	2	0 - 3	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 3	0 - 1
groundplum milkvetch	Astragalus crassicaupus	ASCR2	2	0 - 3	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 3	0 - 1
mat loco	Astragalus kentrophyta	ASKE	2	0 - 3	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 3	0 - 1
povertyweed	Iva axillaris	IVAX	2	0 - 3	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	0 - 3	0 - 1
sessile nailwort	Paronychia sessiliflora	PASE	2	0 - 3	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 3	0 - 1
sulphur-flower buckwheat	Eriogonum umbellatum	ERUM	2	0 - 3	0 - 1
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	0 - 3	0 - 1
other perennial forbs		2FP	2	3 - 9	1 - 3
SHRUBS			3	30 - 60	10 - 20
fourwing saltbush	Atriplex canescens	ATCA2	3	15 - 30	5 - 10
winterfat	Krascheninnikovia lanata	KRLA2	3	9 - 21	3 - 7
James' frankenia	Frankenia jamesii	FRJA	3	3 - 9	1 - 3
Bigelow sage	Artemisia bigelovii	ARBI3	3	0 - 3	0 - 1
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 3	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 3	0 - 1
plains greasebush	Glossopetalon planitierum	GLPL	3	0 - 3	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 3	0 - 1
shadscale	Atriplex confertifolia	ATCO	3	0 - 3	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 3	0 - 1
walking stick cholla	Opuntia imbricata	OPIM	3	0 - 3	0 - 1
other shrubs		2SHRUB	3	3 - 9	1 - 3
Annual Production lbs./acre			LOW	RV*	HIGH
GRASSES & GRASS-LIKES			115 -	233	-600
FORBS			10 -	23	-35
SHRUBS			25 -	45	-65
TOTAL			150 -	300	-700

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV = Representative value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Sideoats Grama, Western Wheatgrass, Fourwing Saltbush Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for adequate recovery periods following each grazing event.

The historic climax plant community consists mainly of mid cool and warm season grasses and shrubs. The principal dominant mid grasses are western wheatgrass and sideoats grama. Blue grama is the dominant short grass. Galleta, alkali sacaton, little bluestem, Indian ricegrass and green needlegrass are also present. Forbs and shrubs such as purple prairie clover, American vetch, Fremont goldenweed, scarlet globemallow, fourwing saltbush, and winterfat are significant. The HCPC is about 70-85% grasses and grass-like, 5-10% forbs and 10-20% woody plants.

This is a sustainable plant community in terms of watershed function and biological integrity. Litter is properly distributed. Some litter movement may occur on steeper slopes. Decadence and natural plant mortality is very low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This community is resistant to many disturbances except continuous grazing, tillage and/or development into urban or other uses.

Total annual production, during an average year, ranges from 150 to 700 pounds per acre air-dry weight and will average 300 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6901

Growth curve name: Warm season/cool season, co-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	30	20	10	3	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods following grazing events will shift this plant community toward the *Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Sideoats Grama, Western Wheatgrass, Fourwing Saltbush Plant Community (HCPC)*.

Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

This community developed with longer term continuous grazing resulting from the lack of adequate recovery periods between grazing occurrences. Blue grama and/or galleta dominate this plant community. Mid cool and warm season grasses such as western wheatgrass, sideoats grama and green needlegrass have been reduced to remnant amounts. American vetch, purple prairie clover, fourwing saltbush and winterfat are reduced but can still be found. Shadscale, James Frankenia, Bigelow sagebrush and Louisiana sagewort are beginning to increase in abundance.

Plant frequency and vigor have decreased. Reduction of rhizomatous grasses, nitrogen-fixing forbs, shrub component and increased warm season short grasses have begun to alter the biotic integrity of this community. Water and nutrient cycles are becoming impaired. Flow paths and small rills can be found. Some mildly pedestaled plants can be found. This is an early stage of desertification.

Total annual production, during an average year, ranges from 100 to 400 pounds per acre air-dry weight and will average 200 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6903

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	35	25	15	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunity between grazing events will shift this plant community across an ecological threshold toward the *Blue Grama Dominated Plant Community*.
- Prescribed grazing with adequate recovery periods following each grazing event and proper stocking will move this plant community toward the *Sideoats Grama, Western Wheatgrass, Fourwing Saltbush Plant Community (HCPC)*.

Blue Grama Dominated Plant Community

This plant community has developed with further continuous grazing. Blue grama can dominate this plant community on milder slopes. Sod bound conditions rarely develop because of shallow soils. Western wheatgrass and green needlegrass are absent and have been replaced by increased amounts of red threeawn and sand dropseed. Sideoats grama, little bluestem, fourwing saltbush and winterfat occur in remnant amounts confined to primarily rough/steep side slopes. Shadscale and broom snakeweed continues to increase.

A significant amount of production and diversity has been lost when compared to the HCPC. Loss of cool season grasses, key shrubs and nitrogen fixing forbs have negatively impacted energy flow and nutrient cycling. Soil loss is obvious where flow paths are connected. The plant community lacks diversity and exhibits a greatly impaired water cycle. This community is at risk of losing sideoats grama, western wheatgrass, little bluestem, winterfat and fourwing saltbush.

Total annual production, during an average year, ranges from 50 to 200 pounds per acre air-dry weight and will average 100 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6904

Growth curve name: Warm season dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	45	25	15	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunity between grazing events will shift this plant community across an ecological threshold toward the *Increased Shrubs, Annuals and Bare Ground Plant Community*. This transition can occur in a short time span (10 - 20 years).
- Long-term prescribed grazing with adequate recovery periods between grazing events will move this plant community to the *Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community* and eventually to the *HCPC* or associated successional plant communities assuming an adequate seed/vegetative source is available. This change will require a long period of time and may be difficult to attain depending on the degree of degradation.

Increased Shrubs, Annuals and Bare Ground Plant Community

This plant community develops with further continuous grazing. Lower successional shrubs such as broom snakeweed, shadscale, and plains greasebush have replaced remnant amounts of blue grama, winterfat and fourwing saltbush. Annual invaders such as kochia, Russian thistle and cheatgrass have increased.

Increased bare ground is a major concern. Erosion potential is high. Soil loss can be severe. This community lacks stability, diversity and productivity. Desertification is well advanced.

Total annual production, during an average year, ranges from 25 to 100 pounds per acre air-dry weight.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6904

Growth curve name: Warm season dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	45	25	15	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Very long-term prescribed grazing with adequate recovery periods between grazing events and proper stocking can eventually move this community back to the *Historic Climax Plant Community* or associated successional plant communities, depending upon the degree of degradation of the plant community and availability of an adequate seed/vegetative source. This transition may take up to 80 years or more to accomplish.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The heavy soils and grasses, forbs, and shrubs found on this ecological site provides habitat for numerous wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in species shifts in the bird community. The occasional wetland or spring found on this ecological site provides essential seasonal water needed for reproductive habitat by some reptiles and amphibians. Because of a lack of permanent water, fish are not commonly expected on this ecological site. Mule and white-tailed deer may use this ecological site. The gray wolf and wild bison used this ecological site in historic times. The wolf is thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Sideoats Grama, Western Wheatgrass, Fourwing Saltbush Plant Community

Reptiles using this community include western rattlesnake, bullsnake, western hognose snake, racer, western box turtle, and six-lined racerunner. The structural diversity in the plant community on this site provides habitat for Cassin's and Brewer's sparrow, lark bunting, scaled quail, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for lesser prairie chicken in the eastern part of this ecological site. Small mammals such as white-tailed jackrabbit, badger, swift fox, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Blue Grama/Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

The reduction of shrubs and taller grasses in this plant community results in a shift of bird species away from the HCPC birds. Lark bunting and Cassin's sparrow use declines because of the loss in shrub cover. Habitat conditions improve for long-billed curlew, burrowing owl, mountain plover, killdeer, and horned lark. Ferruginous and Swainson's hawks are frequent users of this community.

Most mammals will be the same as in the HCPC, however, black-tailed jackrabbit and black-tailed prairie dog use will increase because of the changing plant community. Reptiles using this community are the same as in the HCPC.

Blue Grama Dominated and Increased Shrubs, Annuals and Bare Ground Plant Community

As these communities develop into an open landscape the wildlife species will shift away from HCPC species and toward the species that prefer unvegetated areas and short plants. Texas short-lizard, six-lined racerunner, and black-tailed jackrabbit would be expected more frequently here than in the HCPC. In addition, black-tailed prairie dog and burrowing owl might use these communities.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
alkali sacaton	U D D U	N U N N	U D D U	N U N N	N U N N	U D D U	U D D U
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
bottlebrush squirreltail	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
buffalograss	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D
galleta	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N
green needlegrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
Indian ricegrass	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D
inland saltgrass	N U U N	N N N N	N U U N	N N N N	N N N N	N U U N	N U U N
little bluestem	U D P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
needleandthread	U P D D	N D N D	U P D D	N D N D	N D N D	U P D D	U P D D
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
red threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
ring muhly	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	N N N N
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sideoats grama	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
threadleaf sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
vine mesquite	U D P U	U D D U	U D P U	U D D U	U D D U	U D P U	U D P U
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
Forbs							
desert princesplume	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D U
Fremont goldenweed	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
groundplum milkvetch	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
Louisiana sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
mat loco	U U U U	U D U U	U U U U	U D U U	U D U U	U U U U	U D U U
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U P P U
povertyweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
scarlet globemallow	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
sessile nailwort	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
slimflower scurfpea	N N N N	N U U N	N N N N	N U U N	N U U N	N N N N	N N N N
sulphur-flower buckwheat	U U D U	U U U U	U U D U	U U U U	U U U U	U U D U	U U U U
twogrooved milkvetch	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
Shrubs							
Bigelow sage	U N U U	D U D U	U N U U	D U D U	D U D U	U N U U	U N U U
broom snakeweed	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fourwing saltbush	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P
green plume rabbitbrush	N N N D	D D D D	N N N D	D D D D	D D D D	N N N D	N N N D
James' frankenia	N N U U	U U N U	N N U U	U U N U	U U N U	N N U U	N N U U
plains greasewood	N N N U	U U D U	N N N U	U U D U	U U D U	N N N U	N N N U
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
shadscale	D D P D	D U U D	D D P D	D U U D	D U U D	D D P D	D U U D
small soapweed	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D
winterfat	P P D P	P P P P	P P D P	P P P P	P P P P	P P D P	P P D P

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Sideoats Grama, Western Wheatgrass, Fourwing Saltbush (HCPC)	300	0.10
Increased Blue Grama/Galleta	200	0.06
Blue Grama Dominated	100	0.03
Increased Shrubs, Annuals and Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site due to the shallowness of the soil. This site is dominated by soils in hydrologic group D. Infiltration is low and runoff potential for this site varies from moderate to high depending on ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

- (069XY006CO) – Loamy (formerly Loamy Plains)
- (069XY058CO) – Limestone Breaks
- (069XY064CO) – Gravel Breaks
- (069XY046CO) – Shaly Plains

Similar Sites

- (069XY046CO) – Shaly Plains [gentler slopes, more production]
- (069XY064CO) – Gravel Breaks [gravels, not shale; less western wheatgrass]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

N/A

Field Offices

Canon City, Colorado Springs, Cheyenne Wells, Eads, Holly, Hugo, Lamar, Las Animas, Pueblo, Rocky Ford, Simla, Springfield, Trinidad, Walsenburg

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

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Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date